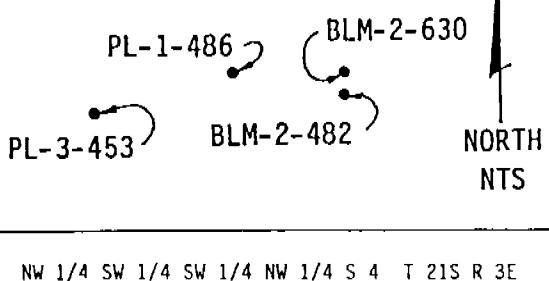


## LITHOLOGIC LOG

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## LOCATION MAP:



SITE ID: NASA-WSTF LOCATION ID: BLM-2-630  
 SITE COORDINATES (ft.):  
N 225701.70 E 402992.49  
 GROUND ELEVATION (ft. MSL): 4535.35 (BRASS CAP)  
 STATE: NEW MEXICO COUNTY: DONA ANA  
 DRILLING METHOD: AIR-FOAM ROTARY  
 DRILLING CONTR.: LARJON  
 DATE STARTED: 12 MAY 1988 DATE COMPLETED: 13 JUNE 1988  
 FIELD REP.: P. EGAN, J. KASZUBA  
 COMMENTS: Top of bedrock @ 657'. Total depth = 670'. Borehole drifted 60'. 14 3/4" borehole 0'-100', 9 7/8" borehole 100'- TD.

## LOCATION DESCRIPTION:

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
5	ooooo+vvv		8	0'-550' cuttings	<u>SURFICIAL ALLUVIUM</u> : The color of the samples throughout the interval is diverse but predominantly medium dark gray (N4) and grayish orange pink (5YR 7/2). Average cutting size is 0.04 inches with cuttings up to 0.5 inches. Cutting shapes range from angular flakes to blocky fragments. The lithology is a poorly sorted, unconsolidated, gravelly, sandy soil. Samples in this interval contain gravel clasts of limestone, rhyolite, caliche, quartzite, sandstone and siltstone up to 30% in a sandy soil matrix with clay and silt.
10	+++vvvvv..:0		6.5		
15	+++-vvvvv..:0		14	0'-5'	Abundant caliche grains and caliche coating on other grains. Clay present, but < 10%. Sand abundant in sample.
20	+++-vvvvv..:0		16	10'-15'	Caliche coating on grains.
25	+++-vvvvv..:0		19	15'-20'	Rhyolite is most abundant constituent in volcanic fraction.
30	+++-vvvvv..:0		21		
35	+++-vvvvv..:0		11	35'-475'	<u>GRAVELLY ALLUVIUM (Santa Fe Group)</u> : The predominant color of the samples throughout the interval is dark gray (N3). Average cutting size is 0.1 inches with cuttings up to 0.3 inches. Cutting shapes range from flakes to blocky fragments. The lithology is an unconsolidated to moderately consolidated (?) (longer drilling times), poorly sorted, pebble to possible boulder polygenetic conglomerate. Clasts are composed of medium dark gray (N4) to grayish black (N2) micritic to sparse biomicritic limestone, light gray (N7) to grayish red purple (SRP 4/2) porphyritic andesite containing plagioclase phenocrysts (occurs more frequently in lower part of section displaying
40	+++-vvvvv..:0		10		
45	+++-vvvvv..:0		21		
50	+++-vvvvv..:0		23.5		

Depth	Visual %	Lith	Drilling Time Scale: min.	Sample Type and Interval	Lithologic Description
50	+ + + + V V V V . . . .		23.5		35' - 65' ALLUVIUM (Santa Fe Group) Continued: epidote alteration of plagioclase), white (N9) rhyolite with varying degrees of iron oxidation rims around mafic phenocrysts (pyrite or magnetite), transparent to white (N9) quartzite, dusky red (5R 3/4) to light olive gray (5Y 5/2) siltstone and minor amounts of granite and sandstone.
55	+ + + + V V V V . . . .		12		
60	+ + + + V V V V . . . .		21	60' - 65'	Silt present, ~ 15%.
65	+ + + + V V V V . . . .		24		
70	+ + + + V V V V . . . .		11		
75	+ + + + V V V V . . . .		10		
80	+ + + + V V V V . . . .		11		
85	+ + + + V V V V . . . .		24		
90	+ + + + V V V V . . . .		11.5		
95	+ + + + V V V V . . . .		7		
100	+ + + + V V V V . . . .		10		
105	+ + + + V V V V . . . .		6		
110	+ + + + V V V V = = . . .		6		110' - 115' Increase in cutting size.
115	+ + + + V V V V = = . . .		5		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
115	+ + + V V V E E . / /		5		
120	+ + + V V V E E . / .		7.5		
125	+ + + + V V V V V . /		7		
130	+ + + + V V V V E . /		6		
135	+ + + + V V V V E . /		6		
140	+ + + + V V V V E . /		7		
145	+ + + + V V V V E . /		7		145'-150' First occurrence of grayish green andesite containing epidote, but in very small amounts.
150	+ + + + V V V V E . /		4		
155	+ + + + V V V V E . /		4		
160	+ + + + V V V V E . /		4		
165	+ + + + V V V V E . /		4		
170	+ + + + V V V V E . /		3		
175	+ + + + V V V V E . /		3.5		
180	+ + + + V V V V E . /		3.5		

Depth	Visual %	Lith.	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
180	+ + + + V V V V . / /		3.5		
185	+ + + + V V V V . / /		7		185'-190' Rhyolite abundant in volcanic fraction.
190	+ + + + V V V V . / /		2.5		
195	+ + + + V V V V . / /		3		
200	+ + + + V V V V . / /		3		
205	+ + + + V V V V V . / /		3		205'-210' Purple andesite appears in cuttings.
210	+ + + + V V V V V . / /		6		
215	+ + + + V V V V V . / /		6		
220	+ + + + V V V V V . / /		4.5		
225	+ + + + V V V V V . / /		6.5		225'-230' Amount of purple andesite increases.
230	+ + + + V V V V V . / /		5		
235	+ + + + V V V V V . / /		5		
240	+ + + + V V V V V . / /		4.5		
245	+ + + + V V V V V . / /		5		

Depth	Visual %	Lith.	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
245	+ + + + V V V V V . . / /		5		
250	+ + + + V V V V V . . / /		8		250'-255' Decrease in cutting size to ~ 1mm. Abundant green epidote fragments.
255	+ + + + V V V V V . . / /		7		
260	+ + + + V V V V V . . / /		9.5		260'-265' Purple andesite comprises ~ 40% of volcanic fraction.
265	+ + + + V V V V V . . / /		5		
270	+ + + + V V V V V . . / /		5		
275	+ + + + V V V V V . . / /		14		
280	+ + + + V V V V V . . / /		10		
285	+ + + + V V V V V . . / /		10		
290	+ + + + V V V V V . . / /		5		
295	+ + + + V V V V V . . / /		6		
300	+ + + + V V V V V . . / /		6.5		300'-305' Significantly less rhyolite in volcanic fraction. Volcanics are mostly green-gray and purple andesite.
305	+ + + + V V V V V . . / /		3.5		
310	+ + + + V V V V V . . / /		9		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
310	+ + + + V V N V V V / /		9		
315	+ + + + + V V V V V / /		6		
320	+ + + + + V V V V V / /		5		
325	+ + + + V V V V V / /		4		
330	+ + + + + V V V V V / /		6		
335	+ + + + + V V V V V / /		15		
340	+ + + + + V V V V V / /		9		
345	+ + + + + V V V V V / /		10		
350	+ + + + V V V V V / /		6		
355	+ + + + V V V V V / /		7		
360	+ + + + V V V V V / /		11.5		
365	+ + + + V V V V V / /		15		
370	+ + + + V V V V V / /		8		
375	+ + + + V V V V V / /		8		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
375	+ + + + V V V V V V : /		8		
380	+ + + + V V V V V V : /		7		
385	+ + + + V V V V V V : /		9		
390	+ + + + V V V V V V : /		18		
395	+ + + + V V V V V V : /		17		
400	+ + + + V V V V V V : /		17		
405	+ + + + V V V V V V : /		22		
410	+ + + + V V V V V V : /		10		
415	+ + + + V V V V V V : /		5.5		
420	V V V V V V + + + : /		7.5		
425	V V V V V V + + + : /		10		
430	+ + + + V V V V V V : /		6.5		
435	V V V V V V + + + : /		5		435'-475' Volcanics (purple andesite) becoming more abundant.
440	V V V V V V + + + : /		10		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
440	VVVVVVVV+++		10		
445	VVVVVVVV+++		6		
450	VVVVVVVV+++		4		450'-455' Less than 10% caliche present as grains and as coating on other grains.
455	VVVVVVVVVV++		4		
460	YVVVVVVVVV++		5		
465	VVVVVVVVVV++		5		
470	VVVVVVVVVV++		7		
475	VVVVVVVVVV++		3		475'-657' <u>ANDESITE-RICH GRAVELLY ALLUVIUM (Santa Fe Group)</u> : Alluvium has become andesite rich. Significant color change in samples. Penetration rate has increased. Drilling fluid has changed to a purplish color. Samples are grayish red purple (SRP 4/2) when wet and medium gray (NS) when dry. Average cutting size is 0.2 inches and ranges in size from < 0.1 inches to 0.25 inches. Sample consists of 95% aphanitic andesite containing minor (< 15%) anhedral to euhedral plagioclase phenocrysts. Average phenocryst size is 0.05 inches. Remaining 5% of sample contains limestone, calcite or other volcanic clasts.
480	VVVVVVVVYYYY		3		
485	VVVVVVVVYVVVV		4		
490	VVVVVVVVYVVVV		4		
495	VVVVVVVVYVVVV		3		
500	VVVVVVVVYVVVV		4		
505	VVVVVVVVYVVVV		4		500'-505' Calcite is less than 10% and present in large milky transparent clasts displaying cleavage surfaces. Possibly fracture filling.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
505	VVVVVVVVVVVVVV		4		
510	VVVVVVVVVVVVVV		2		510'-525' Poor sample return. One sample represents 15'. Significant decrease in cutting size to 1 mm.
515	VVVVVVVVVVVVVV		5		
520	VVVVVVVVVVVVVV		6		
525	VVVVVVVVVVVVVV		7		
530	VVVVVVVVVVVVVV		6		530'-550' Poor sample return. One sample represents 20'.
535	VVVVVVVVVVVVVV		6		
540			5		
545			6		
550	VVVVVVVVVVVVVV		6.5	550'-560' core	550'-560' *** core interval *** No recovery
555			3.5		550'-570' Sample recovery poor. One sample represents 20'.
560			5	560'-670' cuttings	
565			6		
570	VVVVVVVVVVVVVV		4		570'-585' One sample collected.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
570	VVVVVVVVVVVVV		4		
575			3		
580			3		
585	VVVVVVVVVVVVV		4.5		585'-600' One sample collected.
590			4		
595			4		
600	VVVVVVVVVVVVV		3		600'-615' One sample collected.
605			4		
610			3		
615	VVVVVVVVVVVVV		4		615'-630' One sample collected.
620			2		
625			4		
630	VVVVVVVVVVVVV		6		630'-645' One sample collected.
635			6		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
635			6		
640			8		
645	VVVVVVVVVVVV		8		645'-660' One sample collected.
650	VVVVVVVVVVVV		5		
655	VVVVVVVVVVVV		6		
660	VVVVVVVVVVVV		10		657' Orejon Andesite contact.
665	VVVVVVVVVVVV		12		657'-670' <b>OREJON ANDESITE:</b> Drilling rate has significantly decreased and bit is chattering. Cuttings have become more uniform in size and shape and are 100% grayish red purple (5RP 4/2) andesite. Cuttings are very angular and flake-shaped. The average cutting size is 0.2 inches and ranges from < 0.1 to 0.3 inches. The andesite is porphyritic, containing < 15% anhedral to euhedral phenocrysts of white plagioclase and lesser amounts of a mafic mineral (biotite, hornblende ?).
670	VVVVVVVVVVVV		42		Total depth = 670'.
675					
680					
685					
690					
695					
700					